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Part of ORR
(IP-353A)

ANTI-FRICTION BEARINGS IN USE IN SOME SOVIET EQUIPMENT

Central Intelligence Agency
Office of Research and Reports

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INTRODUCTION

Purpose

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The purpose of this report is to make available a list of the types and sizes of the antifriction bearings used in certain Soviet equipment, and to equate the Soviet types and sizes into western standard types and sizes such as SKF, Fafnir, RIV, etc. The criteria of selecting the Soviet equipment is whether or not the equipment has military value or can support a war economy.

Source of Material

Ideally, the list should encompass all the weapons, vehicles, machine tools that use anti-friction bearings and are in accordance with the above criteria, but it is necessarily limited at this time by the availability of information. The present list is derived from translations of open Soviet literature and from actual physical examination of a few sample pieces of equipment. Where possible each bearing has been checked in a Soviet anti-friction bearing catalogue.

An extension of this list will have to wait upon further exploitation of some pieces of equipment now in our hands and by selecting U.S. and other western equipment similar to known pieces of Soviet equipment and deriving the types and sizes of strategic anti-friction bearings by inference. Steps have already been taken to derive in this manner the bearings in Soviet artillery pieces.

Explanation of Tables

Each table is headed by the name and model of the piece of equipment and a short description.

In the original data the description of the bearing was frequently inadequate and it has been supplemented from the Soviet catalogue.

The Soviet bearing number was stamped on each bearing in those cases where the equipment was physically examined. In each case it is in accordance with the new Soviet numbering system which was established in 1950.

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The SKF number is used where possible because the SKF company catalogues the greatest assortment of bearings among the western manufacturers.

Dimensions are in millimeters unless otherwise noted.

Quantities listed, where known, are per piece of equipment.

Where information is lacking, or where it was not possible to find the western equivalent of a Soviet bearing, the space has been left blank.

Coordination

Mr. H. E. Gillespie, Chief, and Mr. A. J. Ruffell of the Bearings and Oil Seal Branch of BuShips [illegible] Soviet bearings to SKF numbers; and the Industrial Division, CIA, provided the material on the machine tools.

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TABLE 1

SOVIET TANK

T 34/85 tank manufactured in 1945

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball thrust	8120	51120	Crankshaft thrust	100	135	25	1	
Ball	303	6303	Oil pump drive idler	17	47	14	1	
Double ball, self align	1207	1207	Main access drive shaft, lower end	35	72	17	1	
Roller			Main clutch	110	174	30	1	
Ball			Main clutch				1	
Ball thrust	500		Steering clutch	110	174	30	2	U.S. manufactured
Double ball, self align	1412	10412	Steering clutch	60	150	35	2	
Ball	205	6205	Fuel injector pump camshaft	25	52	15	2	
Ball	303	6303	Water pump	17	47	14	1	
Ball	305	6305	Generator, drive end	25	62	17	1	
Ball	205	6205	Generator, commut end	25	52	15	1	
Ball	205	6205	Starter, commut end	25	52	15	1	
Double ball, self align	1209	1209	Starter, drive end	45	85	19	2	
Roller, tapered	7218	30218	Transmission pinion	90	160	26	1	
Ball thrust	1-8320	51324	Transmission pinion	100	170	55	1	

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TABLE [illegible]

SOVIET TANK (CONTINUED)

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Roller	2317	M-317	Transmission pinion	85	180	41	1	
Roller, double, tapered	7216	Timken 590/592 D	Transm. drive cross shaft	80	160	64	1	
Roller, double, tapered	7216	"	Transm. driven cross shaft	80	160	64	1	3.149 x 6.000 x 2.500
Roller	2218	M-218	Transm. driven cross shaft	90	160	30	2	" " "
Roller	92412		Transm. drive cross shaft	60	150	35	2	
Roller	567		Transm. reverse idler gear	52	90	70	2	One is U.S. manufactured
Roller, double, tapered, self-align	3522	22222	Final drive	110	200	53	2	Hyatt type
Roller, tapered	95511	Timken 95511/95905	Final drive	130	230	48	2	
Roller, tapered	7230	30230	Final drive	150	270	50	2	5.1181 x 9.0551 x 1.9375 U.S. manufactured
Roller	864915		Final drive, pinion	75	106	57	2	
Ball	3317	6317	Track idler	86	150	40	2	
Roller	2220		Track idler, inner brg.	166	180	34	2	U.S. manufactured
Ball	316	6316	Bogie wheel	80	170	39	20	
Ball	201	6201	Turret rotating mechanism electric [illegible]	12	32	10	1	
Ball	203	6203	Turret [illegible] electric motor [illegible] end	17	40	11	1	

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TABLE 1

SOVIET TANK (CONTINUED)

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball	305	6305	Turret rotat mechsm. worm shaft, drive end	25	62	17	1	
Ball	304	6304	Turret rotat. mechsm. worm shaft, pilot end	20	52	15	1	
Ball	304	6304	Turret rotat mechsm. spur gear shaft	20	52	15	1	
Ball	201	6201	Ventilating fan, drive end	12	32	10	1	
Ball thrust	6015	E-15	Vent. fan, comm. end	15	35	8	1	
Ball, no inner race			Tachometer brgs.				5	
Needle, no inner race			Governor thrust arm				1	
Needle, no inner race			Fuel pump tappet assy's.				12	
Ball thrust			Governor				1	
Ball thrust			Turret ring				1	
Ball thrust			Commander's hatch				1	
Separate balls & cup, clutch			Clutch release mechsm				9	

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TABLE II

MIG AIRCRAFT ENGINE

MIG 15

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS* BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball, caged		6005	Accessory case	0.98	1.85	.4724	2	9105 K FAFNIR
Ball, "		6206	" "	1.18	2.44	.629	1	206 "
Ball, shielded			" "	1.25	2.166	3/8	5	S 12 K "
Ball, "			" "	1.37	2.44	.551	5	6107 NORMA HOFFMAN
Ball, caged		RLS 24	Main bearings	3	5 3/4	1 1/16	1	LS 19 " "
Roller, caged, no outer race		CRL 16	" "	2	4	13/16	1	RLS 15 " "
Roller, caged, no outer race			" "	1 1/2	4 3/4	3/4	1	RXLS 3½ " "

* Inches

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TABLE III

S-80 TRACTOR (CATERPILLAR)

Most powerful Soviet tractor - 80 horsepower
Copy of U.S. Caterpillar Co.'s D7 Tractor.

TYPE OF BEARING	SOVIET NO.	SKF, NO.	BEARING APPLICATION IN EQUIPMENT	BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball	203	6203	Gov. of diesel engine	17	40	12	1	
Ball	208	6208	Start motor clutch sleeve shaft and reducing gear	40	80	18	2	
Roller, cyl, spiral, rollers single split cut ring	45804		Start motor crankshaft	20	3¼	25	1	
Ball	210	6210	Start motor crankshaft	50	90	20	1	
Ball	211	6211	Start motor crankshaft	55	100	21	1	
Roller, spiral rings, no inner ring	35914	Hyatt 521178	Main friction clutch	68	100	3¼	1	
Roller, tapered	7312	30312	Side friction clutch	60	130	3¼	2	
Ball	215	6215	Side friction clutch	75	130	25	2	
Ball	213	6213	Transm. up shaft and crankshaft	65	120	23	1	
Roller, graphitised steel grooved for lock ring pressed cage.	402110	NICO Spec	Transm. up shaft and crankshaft	50	110	27	2	
Roller, graphitised steel two flanges on cut ring, no outer ring, pressed cage.	502208		Transm., idler gear shift	40	70	17	2	

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TABLE III (CONTINUED)

S-80 TRACTOR (CATERPILLAR)

Most powerful Soviet tractor - 80 horsepower.
Copy of U.S. Caterpillar Col's D7 Tractor.

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Roller, groove for lock ring, pressed cage	402715	NU15	Transm. lower shaft	75	160	37		
Ball	310	6310	Transm, crankshaft & lower shaft	50	110	27	2	
Ball	306	6306	Diesel fan	30	62	16	2	
Roller, one flange on in. ring, solid brass cage	42312	NF312	Gear	60	130	31	6	
Roller, as above	42312	NJ312	Gear	60	130	31	6	
Roller, as above	42314	NJ314	Side reduct. gear	70	150	35	2	
Roller, tapered, lock flange on out ring	67728		Side reduct gear	140	230	58	2	
Roller, tapered, not std.	7723		Side reduct gear	115	190	49	2	
Ball, thrust	8103	51103	Start motor gov	17	30	9	1	
Needle, one pressed outer ring	94702		Diesel gov	15	20	12	2	
Ball, thrust	808205	Riv 80905.	Diesel gov	25	48	15.5	1	

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TABLE IV

DT 54 TRACTOR

New diesel caterpillar general purpose tractor based upon heroosene SCHUTZ-MATI tractor design. 54 horsepower

ITEM OF [illegible]	[illegible] NO.	[illegible] NO.	MARKED APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY
Ball	205	6205	Pinion shaft gear, axle of tension pulley, water pump, drive shaft of reducer of starting engine	25	52	15	
Ball, one shield	60206	6206-Z	Crankshaft axles of tension pulley of water pump and ventilator	30	62	16	
Ball	306	6307	Water pump shaft	30	72	19	
Roller, conical rollers	5307	2007	Ventilator pulley	35	80	21	
Ball	408	6408	Main coupling shaft, and reverse shaft, and power take-off	40	110	27	
Ball, angular contact	516713	-	Main coupling clutch	63	102	27	
Ball, high flange on inner ring	204	6204	Crankshaft of start engine	20	47	14	
Ball	202	6202	Semi-axle of crankshaft of start engine	15	35	11	
Ball, double	1305	1305	Same	25	62	17	
Ball	206	6206	Shaft of Bendix of reducer of starting engine	40	80	18	
Ball	209	6209	Reducer of start engine	45	85	19	

EQUIVALENT to HO-1307-Z-[illegible]

~~Equivalent to [illegible]~~

TABLE IV CONTINUED

DT-54 TRACTOR

New diesel caterpillar general purpose tractor based upon kerosene SKhTZ-NATI tractor design, 54 horsepower

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball, double, spheric	1204	1204	Reducer of start engine	20	47	14		
Roller, tapered	7909		Supporting rolls	45	100	38.5		
Roller, tapered	7513	32213	Steer wheel hub	65	120	33		
Roller, tapered	7609	32209	Steer wheel hub	45	100	38.5		
Ball	107	6407	of supporting rollers	35	100	25		
Ball	308	6308	of intermed shaft KPP	40	90	23		
Ball, groove for lock ring	50408	6408MR	on outer ring of primary shaft, KPP	40	110	27		
Ball, groove for lock ring	50409	6409MR	Reverse shaft and power take off	45	120	29		
Ball, cylin, brass cage	2712		C'shaft and final drive gear	60	110	51		
Ball, spherical	1610	2310	C'shaft, KPP	50	110	40		
Ball, angul. contact, non-detach	26216	7216	of rear bridge (?)	80	140	26.5		
Roller, tapered	7312	31312	of rear bridge (?)	60	130	31		
Roller, cylindrical	92412	NUP[illegible]	Final drive	60	150	35		
Roller, tapered, brass cage	7518	RIV 07/74.8	Steer wheel hub	90	160	43		

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TABLE V

S-60 and S-65 TRACTORS (CATERPILLAR)

No longer produced. Were prime movers used in World War II. Still in use and requiring spare parts. 48-50 H.P. drawbar horsepower. S-60 used ligroin fuel and S-65 is diesel powered.

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball, thrust	8206	51206	Regulator	30	53	16		S-60 only
Ball, thrust, special, protruding free ring	958726		Clutch	130	235	41		
Ball, double, angular contact, 1 piece outer ring, 2 inner rings	86713		Upper shaft, front	65	140	58.74		
Roller, tapered	7616	32316	Lower shaft, rear	80	170	62		
Roller, tapered, not std.	7712	REV 03/06/326	Same, front	60	120	46		
Roller, tapered, not std.	7721		Shaft of bevel gear	105	215	78		
Roller, tapered, not std.	7718		Thrust gear	90	160	50		
Roller, tapered, not std.	7818	REV 05/10/	[illegible] ?	90	170	62		
Roller, spiral rollers	5306	REV [illegible] 2876, [illegible] 5306	Vent fan	30	72	30		
Roller, spiral rollers, inner ring w/ increased height	985713	REV [illegible]	Upper shaft, rear	65	140	47/55		
Roller, spiral rollers, w/ single slit outer ring	45511		Low. roller of track	55	100	40		

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TABLE V
(Continued)

S-60 AND S-65 TRACTORS (CATERPILLAR)

No longer produced. Were prime movers used in World War II. Still in use and requiring spare parts. 48-50 H.P. drawbar horsepower. S-60 used ligroin fuel and S-65 is diesel powered.

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Radial roller, w/ [illegible] ring	45213		Tightening wheel ?	65	120	100		
Ball	202	6202	Generator	15	35	11		
Ball	203	6203	Diesel gov.	17	40	12		C-65 only
Ball	204	6204	Generator	20	47	14		
Ball	208	6208	Clutch coupling and shaft of starter	40	80	18		C-65 only
Radial roller, w/ [illegible] ring	45204		Clutch coupling	19.895	34	25		C65 only
Ball	210	6210	Crankshaft of starter	50	90	20		C-65 only
Ball	211	6211	Crankshaft of starter	55	100	21		

* Some original data had no dimens; added from Sov. catalogues.

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[redacted]
(Unclassified)

[redacted]

52 Horsepower kerosene/caterpillar. Prototype of new Soviet DT-54 diesel tractor.

TYPE OF BEARING	SOVIET NO.	SKF NO.	LOCATION & APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball	309	6309	Driver, front	[illegible]	100	25		
Ball	407	6407	Driver, rear	[illegible]	100	25		
Ball	411	6411	Driver	[illegible]	140	33		
Ball, thrust	8109	51109	Starting crank (shaft?)	45	65	14		
Ball, angular contact	6015	E-15	Armature rotor, front	[illegible]	95	8		
Ball, angular contact	6017	L-17	Armature rotor, rear	17	40	10		
Ball	203	6203	Generator	17	40	12		

NOTE: Original data did not contain dimens; added from Sov. catalogue.

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TABLE VI
(Continued)

SKHTZ--HATT TRACTOR LTA

52 Horsepower kerosene caterpillar. Prototype of new Soviet DT-54 diesel tractors.

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY
Ball, groove for lock ring on outer ring	50612	6212-NR	Small final drive gear, universal	60	150	35	
Ball, thrust	8104	51104	Oil pump shaft	20	35	10	
Roller, tapered	7909	32309	Support bearing?	45	100	38.5	
Roller, special rollers			Support?				
Ball	307	6307	Support?	35	80	21	
Roller, tapered	7513	32213	Steering wheel, inner	65	120	33	
Roller, tapered	7609	32309	Steering whee , outer	45	100	38.5	
Ball, double, spherical	1205	1205	Power take-off	25	52	15	
Ball, double	1308	1308	Power take-off, rear	40	90	23	
Ball, angular contact, high flange on outer ring	916913		Main coupling, middle	65	102	27	
Ball, angular contact, high flange on outer ring	205	6205	Governor gear	25	52	15	
Ball, angular contact	6012	E-12	Governor shaft, rear	12	32	7	
Ball	208	6208	Ventil fan & water pump	40	80	18	
Ball	305	6305	Axle of tension pulley	25	62	17	
Ball	308	6308	Ventil and water pump	40	90	23	

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TABLE VII

ZIS 5

3 ton 2 axle truck, first produced in 1936

KIND OF BEARING	SKF NO.	RIV NO.	GPZ NO.	BEARING APPLICATION IN EQUIPMENT	BORE	O.D.	WIDTH	CLEARANCE
Ball, thrust, in housing	996721			Clutch coupling	55	90	23	
Ball	2205		6205	Shaft coupling	25	52	15	
Roller thrust, tapered, in housing	97305			Front axle king pin	26	50	17	
Ball	2210		6210	Drive gear of reducer, rear bridge	50	110	27	
Ball	2214		6214	Diff.	70	125	24	
Roller, tapered	7204		32304	Ventilator	20	47	15.5	
Roller, tapered	7208		32308	Gear box	40	80	20	
Roller, tapered	7609		32309	Reducer of rear bridge	45	100	38.5	
Roller, tapered, non-std	7714	RIV	01/02/3157	Rear wheel	70	120	45	
Roller, tapered	7206		32306	Front wheel, outer	30	72	29	
Roller, tapered, non-std	7209	RIV	01/02/3134	Front wheel, inner	45	90	38.5	
Ball, thrust w/cage ring	996309			Worm of steer col.	46.5	60.3	8.5	
Roller, cyl, w/o rings	42706			Main shaft transmission	30	42	44.1	
Ball	306		6306	Interm shaft of transm.	40	90	23	

TABLE VII CONTINUED

XIS 5

3 ton 2 axle truck, first produced in 1936

BEARING APPLICATION OR EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Drive gear of trunnion box	55	100	32		
Reducer of rear bridge	45	100	32		
Generator	20	47	14		
Internal shaft	35	80	21		

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TABLE VIII

ZIS 150 TRUCK

Std. 3 ton truck, equivalent to ZIS 51 but heavier.
Currently involved in development to increase payload

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball, one shield	60205	6205-Z	Fr. Transm. primary shaft	25	52	15	?	
Ball, sp groove for lock ring, solid brass cage	50613	6213-MB	Transm. primary shaft	65	120	23		
Roller, cylin. short rollers	GPZ-12307	NJ307/M	Fr. transm o'shaft	35	80	21		
Ball, sp groove for lock ring without rings	50607	6207-MB	Fr. transm. o'shaft	35	100	25		
Roller, long rollers	42706		Transm. Main shaft pilot brg. and reverse gear	30	42	44.1		
Ball, sp groove for lock ring	50711	6311-MB	Transm. Main shaft rear	55	120	29		
Ball, angul. con. in housing, capped outer ring	908711	HHCB 5306	Clutch release	55	90	23		
Needle, no inner ring	GPZ 804705	B	Univ. joint	25.15	39	28		
Roller, tapered, super-fin.	7610-A	32310/SF	Diff. axle drive level pin and spur gear	50	110	42.5		
Roller, tapered, super-fin	7613-A	32313/SF	Diff axle drive level pin., rear	65	140	51.5		

TABLE VIII CONTINUED

ZIS 150 TRUCK

Std. 3 ton truck, equivalent to ZIS 51 but heavier.
Currently involved in development to increase payload.

TYPE OF BEARING	COVERT NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Roller, tapered super fin.	7215	30215/DF	Diff	75	130	27.5		
Roller, tapered no-std.	7815		Hub, rear wheel	75	135	44.5		
Roller, tapered	7603	32303	Hub, fr. wheel, outer	40	90	35.5		
Roller, tapered	7611	32311	Hub, fr. wheel, inner	55	120	46		
Roller, tapered no inner ring	977909		Steer gear worm	46.673	72	14	?	
Ball, angular no cage	836906		Steer gear	28	42	26		
Needles			Steer gear shaft rollers					
Ball, up groove for lock ring	50207	6207-2RS	Compressor cr.shaft, fr.	35	72	17		Rollers 16 x 3 mm
Ball	207	6207	Compr. cr. shaft, rear	35	72	17		
Ball, felt seal on one side	20603	RD 8603	Water pump shaft, fr.	17	47	15.5		
Ball, felt ring on one side	20703	RD 8503	Water pump shaft, rear	17	40	14		

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TABLE IX

ZIS 151 TRUCK

Military version of ZIS 150 3 ton truck. Has 3 axle drive. Resembles US Army 2½ ton 6x6 (GMC or Studebaker)

TYPE OF BEARING	SOVIET NO.	SKF. NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Roller, taper, w/cup large angle cone	27709		Transfer Case	45	100	32	3	
Roller, taper	7508Y		Transfer Case	40	80	33.3 ?	5	
Roller, taper	7308	30308	Transfer Case	40	90	25.5	2	
Ball w/locking groove and ring	50311	6311-MR	Transmission	55	120	29	1	
Ball	50213	6213-MR	Transmissio	65	120	23	1	
Ball	50607	6607-MR	Transmission	35	100	25	1	
Roller w/cup #12307 K. MR. Solid cage	P307	30307/M	Transm. Main Shaft Brg.	35	80	21	1	
Roller	54705 ?		Mainshaft & Idler	30	41.3	43.7	3	
Ball? Roller?			Clutch Release	89?	54?		1	
Needle	204705		Univ. Joints	24.6	44.5 & 28.6	19.8	40	
Ball, felt seal one side	208037	N.D 8603	Water Pump Impeller Shaft outer Brg.	17	47	17	1	
Ball,	207031?		Water Pump Impeller Shaft Inner Brg	17	40	14	1	

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TABLE IX CONTINUED

ZIS 151 TRUCK

Military version of ZIS 150 3 ton truck. Has 3 axle drive. Resembles US Army 2½ ton 6x6 (GMC or Studebaker)

Item	Actual No.	Std. No.	Bearing Application in Equipment	Dimensions Bore	O.D.	Width	Quantity	Remarks
Ball	~~50207~~	6207-NR						
Roller, Taper w/cups	27062		Air compressor crankshaft main Brg.	35	72	17	2	
Roller, Taper w/cups	~~27687~~							
Roller, Taper w/cups	~~32076~~	22076	Steering Knuckle Brg.	30	72	24.5	4	
Roller, Taper w/cups	922906	R1V5704A						
Roller, Taper w/cups	~~27709~~	R1V5704A	Pinion Brg, inner Drive	31.8	62	27	3	
Roller, Taper w/cups	27709	27709	Pinion Shaft, inner Drive	45	100	32	6	
Roller, Taper w/cups	8078137							
Roller, Taper w/cups	~~8078137~~		Wheel Brg.	65	102.4		6	
Roller, Taper w/cups	8078137		Diff. carrier	65	102.4		6	
Roller, Taper w/cups	~~7514~~	~~32214~~ 32208	Wheel Brgs	70	125	33.5	6	
Roller, Taper w/cups	~~7508~~	~~27508~~	Outside Trunnion Shaft	40	80	25	2	
Roller, Taper w/cups	~~7511~~	~~R1V 01/02/3246~~	Inside Trunnion Shaft	55	100	20	2	
		R1V 01/02/3246						

TABLE X

GAZ 51

Std. ½ ton truck - 4 wheel, single drive. First produced in 1946

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball, one shield	60203	6203 Z	Transmission, main drive gear, guide end	17	40	12	1	
Ball	209	6209	Trans. main drive gear	45	45	19	1	
Roller, long rollers, w/o rings	864904	RIV 9394a	Trans. main shaft pilot guide end	20.612	33.325	36.7	1	.8345" x 1.333" x 1.4
Ball	307	6307	Transm. main shaft brg	35	80	21	1	
Roller, long rollers, w/o rings	64904		Trans. c'shaft gear brg	25.40	41.288 41.99(2)	60.4	2	
Ball thrust, in housing, cup shaped outer	788911	RIV 4526	Clutch release sleeve brg	52.387	84.55	20.74	1	
Needle, ring, no inner ring	804704		Univ joint, needle brg assm'd	22	35	20.5	12	
Ball, large angle cone, not std.	208	6208	C'shaft support brg	40	80	18	1	
Roller, tapered, no inner ring, not std.	27709		R. axle drive pinion brg	45	100	29 32(2)	2	
Roller, cylin, short rollers	922906	RIV 5407a	R. axle drive pinion rear	31.766	62.024	26.975	?	
Roller, tapered	7113	Timken 3984/3920a	Differ case brg	65	110	30	?	
Roller, tapered	7514	32214	Rear wheel hub, inner	70	125	31	2	(2.6" x 4.4" x .6) 2.625 x Possibly 3984/3920 x 1.6

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TABLE X (CONTINUED)

GAZ 51

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball, thrust, in housing	98206	RIV 5310b	Steer knuckle pivot brg	30.1 30(2)	53	16	2	
Roller, tapered	7608	32308	Fr. wheel hub, inner	40	90	33 35.5(2)	2	
Roller, superfinish, tapered	7605	32305	Fr. wheel hub, outer	25	62	24 25.5(2)	2	
Rollers, tapered, no rings	977908	Timken 35 BC7	Steering worm(upper)	40.6	66.7	12	1	Should go with Timken
Roller, tapered, outer rings alone	987910	Timken 387	Steering worm(upper)	48	68	19.5	1	Should go with Timken #35 BC
Roller, cylin, short(not) roller, no bearing(std.)	922205	Hyatt 1304TS	Steer gear shaft, end	25	52	15	1	
Roller, long rollers, no rings	6704	Hyatt 93312	Steer gear shaft, upper	20	30	18 18.3(2)	1	
Ball, double, two seals	330078		Water pump shaft	16	30(2)	40(2)	1	
Roller, tapered	807813		Spider pinion housing	70 65	120 110	45 30.5	2	2.7559 x 4.3307 x 1.1
Needles alone	—		Needle brg of tension lever of clutch pressure disk	—	1.6	9	57	
Roller	—		Roller brg as above	—	5.5	9	3	
Ball thrust in housing special	688911	RIV 5723	Clutch release sleeve brg	52.38	84.5	20.7	1	
Roller, cylin, no cage, two adapters	102605	N-2304	End of axle drive pinion	25	62	24	1	
Ball, double, outer ring, angul. contract, spec.	776901		Steer gear shaft	12.75	47.6	24	1	
[illegible]	202	6202	Generator worm side	15	35	11	1	

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TABLE XI

GAZ 63 TRUCK

Military version of GAZ 51, 2½ ton truck.
Has a 2-axle drive, higher ground clearance

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENTIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Roller	22207	—	Steering col., sector col.	26	51		1	
Roller thrust	9879707	—	Bottom brg., steering col	48	68		1	
Roller thrust	9778087	—	Upper brg., steering col.	48	66		1	
Needles w/o rings	64704	—	Lower sector col.	20	30	18	1	
Ball	3300787	—	Brg. bushing w/pipe (water pump)	16	27		1?	
Ball	50309	6309-MR	Main shaft drive gear brg.	45	100	25	1	
Ball	307	6307	Idler shaft brg.	35	80	21	1	
Ball	208	6208	Idler shaft brg.	40	80	18	1	
Roller, tapered	7307	30307	Input & output shaft brgs.	35	80	23	4 sets	
Needles w/o rings	864904	RIV 9394 A	Front main shaft brg.	20.612	33.325	36.7	1	
Needles " "	64904	RIV 9395	Cluster gear shaft brg.	19.1	28.6	43	2	
Ball	208	6208	Front transmission brg.	40	80	18	1	
Ball	307	6307	Rear transmission brg.	35	80	21	1	
Needle, w/o inner ring, cup shaped outer ring	804704	—	Univ. Joint brg.	22	35	20.5	16	
Ball, single thrust	788911	RIV 5723	Clutch release throw out brg.	52.4	84.6	20.7		

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TABLE XI (CONTINUED)

GAZ 63 TRUCK

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Roller	807813	—	Diff. carrier brgs.	65	Cup 109.5		2	
Roller, tapered, large angle cone, w/cup	27709	—	Pinion shaft brg.	45	100	32	2	
Rollers w/2 adapters w/o element on outer ring, w/o cage	102605	Hyatt U 5305 TS	Pinion shaft end brg	25	62	24	1	
Roller, tapered	7514	RIV 01/02/7414	Rear wheel inner brg	70	125	33.5	2 sets	
Roller	807813?		Rear wheel outer brg.	65	Cup 109.5		2 sets	
[illegible]	804704		Universal joint brgs.	22	35	20.5	8	
[illegible]	807813		Front diff. carrier brgs.	65	Cup 109.5		2 sets	
[illegible]	7514	RIV 01/02/7414	Inside front wheel brg	70	125	33.5	2 sets	
Roller	807813?	—	Outside front wheel brg	65	Cup 109.5		2 sets	
Roller, tapered, large angle cone w/cup	27709	—	Upper diff. pinion brg	45	100	32	2	
Roller, tapered	27705	Timken 319/313	Steer knuckle brg.	30	72	24.5	4	
Roller, w/o flanged outer ring, w/2 adapters w/o cage	102605	Hyatt V 5305 TS	Pinion shaft end brg	25	62	24	1	

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XIII

B-477

Soviet army jeep, very similar to US jeep 4 wheel drive.

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS I.D.	O.D.	T.	QUANTITY	REMARKS
Ball, one shield	60203	6203-Z	Drive end of shaft of transm. box & gen.	17	40	12		
Ball, groove for lock ring on outer ring	50306	6306-NR	Distributor	30	72	19		
Ball	209	6209	Transm. box, & front wheel inner	45	85	19		
Ball, double, thrust, 1 piece outer ring, 2 inner rings	156707		Transm. box	35	80	35		
Ball, thrust, in housing	788911		Clutch throw-out	52.388	85.58	20.74		
Roller, tapered	7306	31306	Transm. box	30	72	21		
Roller, tapered, not std.	7906		Transm. box	30.2	63.5	20.5		
Roller, tapered	7209-A		Front & rear bridge	45	85	20.5		1.188976 x 2.500 x
Roller, tapered, double	57709 ?	57707 ?	Front & rear bridge					Could be 57707 (35
Roller	854904		Transm. box	20.6	33.3	36.7		
Roller, w/o rings	64905		Transm. box	25.4	41.288	60.4		Solid roller assembly
Roller, w/o rings	64704		Steering wheel	20	30	18		Solid roller assembly
Roller, w/o rings	64906		Drive shaft, rear	27.71	42.825	44.1		Solid roller assembly
Roller	865910		Back wheels	52.4	81.25	43.5		Roller assembly,

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TABLE XII (Continued)

GAZ M-67

Soviet army jeep, very similar to US jeep—4 wheel drive.

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Roller, w/o inner ring, stamped cage, non-std.	922205	Hyatt 1304-TS	Front & back bridge	25	52	15		
Roller, w/o flanges outer ring, solid brass cage	2207	M-207/M	Front bridge	35	72	17		
Roller, tapered, no inner ring	977907	Timken Equiv. 11-RA	Steer gear	33	49.2	11		Cones less IR
Roller, tapered roller brg.	987908	Timken Equiv. 11-C	Steer gear	33.8	58	17		Cup
Roller, needle, cup outer ring, no inner ring	804704		Front universal joint	22	35	20.5		Torr. style (?)

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TABLE XIII

YAZ 200 and YAZ 205

This 200 series consists of 5-, 7-, and 10-ton trucks with several variations of drive-axles. Only a few thousand of each produced.

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball, one shield, single row	60205	6205-Z	Transm. box & ventilator	25	52	15		
Ball, groove for locking on outer ring	50217	6217-MR	" " "	85	150	28		
" " "	50411	6411-MR	" " "	55	140	33		
, felt seals both sides	30811		Drive shaft	55	100	21/27		
	304	6304	Ventilator	20	52	15		
	301	6301	Regulator	12	37	12		
	200	6200	"	10	30	9		
	201	6201	Cylinder head?	12	32	10		
	205	6205	Supercharger? Fan?	25	52	15		
,With groove for locking on outer ring	50409	6409-MR	Transm. box	45	120	29		
	207	6207	Compressor	35	72	17		
thrust, in housing	986711		Coupling	55	90	23		
,grooved, non-std, filling slot brass cage	70218	6218/M/W/PS	Rear bridge	90	160	30		

TABLE XIII

GAZ and MAZ 205 (CONTINUED)

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball, thrust, in housing	108710	RIV 4458	Front bridge	50	80.5	22.8		
" " spec.lt.series	8102	51102	Regulator	15	28	9		
",spec.w/one-pc rings double row thrust	568057	3205	Supercharger? Fan?	25	52	20.6		
" double w/2 seals	330088		Water pump	16	30	40		
Roller,2 flanges outer ring,no inner ring; solid brass cage	292308	NU 3/8/M W/O inner	Transm box		90	23		NIATT 1308 55
Roller, no rings	64907		Transm box	32	52.1	49		
",conical non-std	7712	RIV 03/06/3263	Rear bridge	60	120	46		
" " "	807713		" "	65	150	54		
" " "	7718	32313	Wheel hub	90	160	50		
" "	7613	32313	" "	65	140	51.5		
" "	7610	32310	" "	50	110	42.5		
" "	7307	30307	Steer wheel	35	80	23		
" "	7306	30306	" "	30	72	21		
Needle,w/one pressed outer ring	94701	RIV 6295-5	Regulator	12	17	12		
" " "	94709		Steer wheel	45	55	38		
" cup outer ring, no inner ring	804907		Drive gear	33.7	50	28.4		

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TABLE XIV

M 72 MOTORCYCLE

Not further identified

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Roller	1680k		Transm rear main cup & shaft brg	20	47	13.5	1	
Ball "	207	6207	Trans. front main shaft	35	72	17	1	
Ball "	206	6206	Countershaft brg	30	62	16	2	
[illegible] aligning			Pilot brg shaft & plug	6.3	22		1	
[illegible]	874907?		Crankshaft	35	71.5	17.5	1	
	207	6207	Front pinion brg	20	51.5	22	1	
	211	6211	Flange brg	35	72	17	1	
	1687	EL-8	Rear generator brg	12	32-	10	1	
	304700		Front generator brg	8	22	7	2	
[illegible] angular contact	778707		Univ. joint brg	10	19	9	4	
	204	6204	Steering column brg	34	51	12.1	2	
			Wheel brgs	20	47	14	4	

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TABLE XV

Model 1615, 12" Engine Lathe

Similar to U. S. [illegible] drive engine lathe

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball	(8) 04?		Headstock				1	
Ball	112.67		Headstock				1	
Ball	204	6204/C 152	Headstock	20	47	14	1	
Ball	205	6205	Headstock	25	52	15	2	
Ball	60205	6205 Z	Headstock	25	52	15	1	
Ball	LE-6305	6305	headstock	25	62	17	2	
Roller, tapered, P class, superfinish	P 6771A S.F.	RIV 01/02/3157	Headstock	70	120	45	1	
Ball, thrust	8104	5110A	Headstock	20	35	10	1	Could be replacement for Timken flanged cup 480A[illegible] SKF).
Ball	120A	120A	Feed rod	20	47	14	1	
Ball	120A	120A	Lead screw	20	47	14	1	
Ball	202	6202	Feed gear	15	35	11	1	
Ball, thrust	80817							
Ball	210	6210		50	90	20	1	

Note: This is only a partial list because the sample machine is incomplete--possibly about 6 bearings are missing.

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TABLE XVI

MODEL 1A62 16" ENGINE LATHE

Similar to U.S. heavy duty Lodge and Shipley 16" lathe

[illegible]	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY
Ball, Taper	2182120		Headstock				1
Ball, Thrust	8118	51118	Headstock	90	120	22	1
Ball, Thrust	8116	51116		80	105	19	1
Ball, Thrust	8215	51215		75	110	27	1
Roller, Tapered	7526	32526					2
Roller, Tapered	7308	30308		40	90	25.5	1
Roller, Tapered	7305	30305		25	62	18.5	2
Roller, Tapered	7524	32224		70	125	33.5	1
Ball	207	6207		35	72	17	1
Ball	213	6213		65	120	23	2
Ball, Thrust			Drive Pulley				1
Ball	22257	?	Tail stock				1
Ball	205	6205	Gear Quadrant	25	52	15	1
Ball	202	6202	?	15	35	11	2
Ball	307	6307	?	35	80	21	
Ball	207	6207	?	35	72	17	1
Roller	7205	30205	?	25	62	16.5	1

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TABLE XVI (CONTINUED)

MODEL 1A62 16" ENGINE LATHE

Similar to U.S. heavy duty Lodge and Shipley 16" lathe

~~XXX W BEARING~~	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Roller, tapered	7308	30308	?	40	80	20	1	
Roller, tapered	7307	30307		35	80	23	1	
Roller, thrust							1	Made in Sweden

Note: This is only a partial list because the sample machine is incomplete. Probably only 5 or 6 bearings are missing.

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TABLE XVIII

Model 1336 M Turret Lathe

1½" bar capacity (Pittler type); no U. S. equivalent; same capacity as Warner-Swasey #3 ram type turret lathe

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball	212	6212	Headstock	60	110	22	1	
Ball	205	6205	Headstock	25	52	15	1	
Ball	202	6202	Headstock	15	35	11	1	
Ball	305	6305	Headstock	25	62	17	1	
Ball	305	6305	Headstock	25	62	17	1	
Ball	210	6210	Headstock	50	90	20	1	
Ball	212	6212	Headstock	60	110	22	1	
Ball	205	6205	Headstock	25	80	21	1	
[illegible]			Headstock				1	Made in Italy
Roller, two-row	3514	3514	Headstock	70	125	33.5	1	
Ball	210	6210	Drive Pulley	50	90	20	1	

Note: This is only a partial list because the sample machine is incomplete--possibly about 6 bearings are missing.

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TABLE XVIII

EXCAVATOR TE 2

A power excavator that can be fitted with a shovel or a pair of long jaws for clearing dense underwater growth in swamps previous to peat removal

TYPE OF BEARING	SOVIET NO.	SKF NO.	BEARING APPLICATION IN EQUIPMENT	DIMENSIONS BORE	O.D.	WIDTH	QUANTITY	REMARKS
Ball	307	6307	Not given	35	80	21	3	
Ball	308	6308	"	40	90	23	3	
Ball	412	6412	"	60	150	35	2	
Ball	210	6210	"	50	90	20	8	
Ball	409	6409	"	45	120	29	4	
Ball	410	6410	"	50	130	31	2	
Ball, thrust	8213	51213	"	65	100	27	2	
Ball, "	8211	51211	"	55	90	25	2	
Ball	216	6216	"	80	140	26	4	
Roller, tapered	7518	32218	"	90	160	43	8	
Roller "	7312	30312	"	60	130	34	4	

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SOURCES

SM 1 Army Concurrs

The basic information about description, Soviet number, and dimensions came in nearly all cases from one source for each item of equipment, and is thus indicated below. Supplementary information and confirmation was taken from "List of Wholesale Prices for Ball and Roller Bearings" published by the Main Administration of the Bearing Industry of the Ministry of Automobile and Tractor Industry. A statement of the front of the catalogue makes it effective 1 January 1950.

Table I (T34 Tank) - "Engineering Analysis of the Russian T34/85 Tank", Chrysler Corporation, Sept 1951. Confid. OK

Table II (MIG Engine) - Abstract of technical report from Cornell Aeronautical Laboratories concerning the breakdown examination of a captured MIG 15. 1952. Secret.

Table III (S 80 Tractor) - "Price List, Wholesale Prices, for Bearings for Tractors and Automobiles", Ministry for the Automobile and Tractor Industry. Moscow, 1950. Unclass.

Table IV (D54 Tractor) - Ibid.

Table V (S 60 and S 65 Tractor) - Ibid.

Table VI (KhTZ - NATI Tractor) - Ibid.

Table VII (ZIS 5 Truck) - Ibid.

Table VIII (ZIS 150 Truck) - Ibid.

Table IX (ZIS 151 Truck) - Ibid.

Table X (GAZ 51 Truck) - Ibid.

Table XI (GAZ 63 Truck) - [illegible], [illegible] 1951, [illegible] 1952. Army (OCS Ordnance) and CIA analysis report of the machine by a U.S. machine tool manufacturer, Secret. Also "Design and Construction of Metal Cutting Tools" by [illegible], Moscow 1950; and the "Machine Building Encyclopedia", Moscow [illegible], Unclass.

Table XVI (16" Lathe) - Ibid.

Table XVII (Turret Lathe) - Ibid.

Table XVIII [illegible] by [illegible]

[illegible]